REMARKS

Favorable reconsideration of this application as amended is respectfully requested. Claims 1, 2, 4, 7-18, 20-22, 32, 35, 36, 40-45, 47-48 are currently pending in the application. No new matter has been added.

35 USC §112

Claim 47 is rejected under 35 USC §112, second paragraph as being indefinite. In particular, the office action suggests that the phrase "may be used" in claim 47 is unclear. Accordingly, the phrase "may be used as" in claim 47 has been replaced with the word "is".

35 USC §103

Clams 1, 2, 5-22, 32, 34-36 and 40-48 are rejected under 35 USC 103 as being obvious over U.S. Patent No. 5,296,736 (Frei et al., hereinafter Frei) in view of U.S. Patent No. 5,008,213 (Kolesar, Jr, hereinafter Kolesar). Amended claim 1 requires a bare die electronics device having a top and bottom disposed in a recess of an electronic package. A conductive bonding material physically couples the device to the package, and electrically couples a non-top terminal of the device to a conductive region in the recess. A dielectric material is disposed so as to form a planar surface over the recess that is level with or higher than the top of the device.

In contrast, Frei discloses a semiconductor assembly that includes a die 20 disposed in a cavity 46 formed in a ceramic carrier (see Frei at Fig. 9, shown below, and accompanying text). The die 20 in Frei is bound in the cavity 46 to a metallization layer 50 by bonding material 56. However, Frei fails to disclose a dielectric material disposed so as to form a planar surface over the recess.

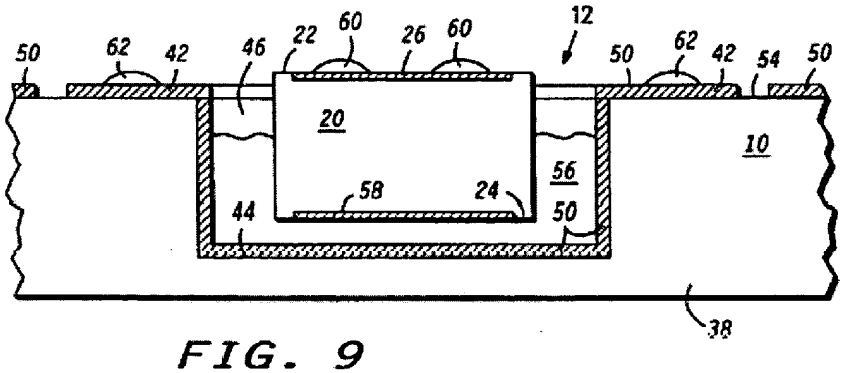


FIG. 9

(From Frei)

Kolesar discloses mounting a die 610 in an etched receptacle formed in a silicon wafer 600 (see Kolesar at Fig. 6, shown below, and col. 11, line 37 to col. 12, line 43). The die 610 in Kolesar is bound in the receptacle by an epoxy material 604 that forms a flat planar configuration between the die 610 and the host wafer 600. Kolesar fails to disclose a conductive bonding material that physically couples the die to the device, and that electrically couples the die to a conductive region in the recess.

The methodology used for forming the planar surface in Kolesar cannot be used in combination with Frei to form applicant's invention as defined by amended claim 1. Kolesar discloses using an epoxy material to form a flat planar configuration. This is accomplished in Kolesar by applying an epoxy to the bottom of each receptacle well, and inserting the die into the epoxy such that the die initially resides above the plane of the wafer (See Kolesar at Fig. 6B, shown below, and col. 11, lines 37-58). The wafer and die in Kolesar is then inverted and pressed against a tooling member, such that the top surface of the die and the epoxy form a flat planar configuration (See Kolesar at Fig. 6C, shown below, and col. 12, lines 15-29). Since the die in Frei is presumably already physically coupled to the carrier by the conductive epoxy in a position that is not planar with the carrier (see Frei at Fig. 9 and col. 8, lines 35 to 42), applying a layer of epoxy to Frei, in the above-described manner disclosed by Kolesar, fails to form a planar surface over the recess that is level with or higher than the top of the device, as required by amended claim 1.

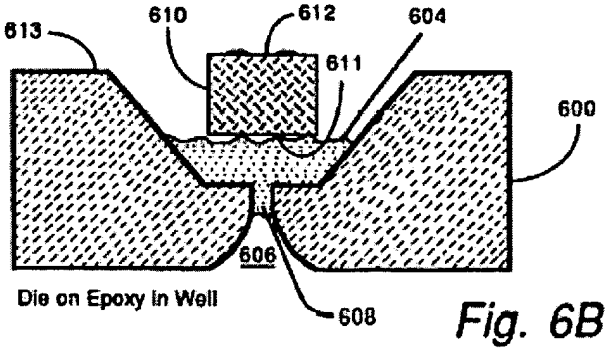


Fig. 6B

(From Kolesar)

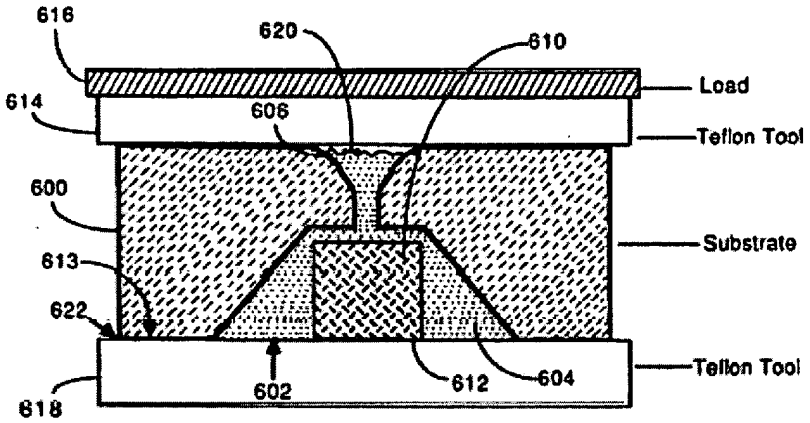


Fig. 6C

(From Kolesar)

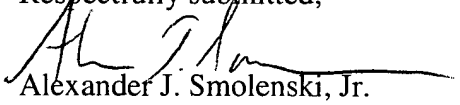
Frei and Kolesar fail to teach the claimed invention. The Federal Circuit has clearly communicated the law of obviousness as: "In order to render a claimed apparatus or method obvious, the prior art must enable one skilled in the art at the time the invention was made to make and use the apparatus or method. *In re Payne*, 606 F.2d 303, 314, 203 USPQ 245, 255 (CCPA1979)" *Beckman Instruments, Inc. v. LKB Produkter AB,* 892 F.2d 1547, 1551, 13 USPQ2d 1301 (Fed. Cir. 1989). The combination of Frei and Kolesar does not enable one of ordinary skill in the art at the time the invention was made to arrive at an assembly that satisfies all of the limitations of amended claim 1. Hence, the cited references fail to "place the claimed invention in the possession of the public" as required to establish obviousness (see *Beckman,* 892 F.2d at 1550). Accordingly, claim 1 is patentable under 35 U.S.C. §103(a) over the art of record.

Amended independent claim 14 similarly requires: that the device is physically coupled to the package by a conductive bonding material; and a dielectric material disposed over the recess such that at least a portion of the first and second conductive regions are essentially planar. Amended independent claim 16 requires: that the device is physically coupled to the package by a conductive bonding material; and a layer of insulation disposed so as to form a

planar surface over the recess that is level with or higher than the top of the device. Amended independent claim 21 requires: that the device is physically coupled to the package by a conductive bonding material; and a layer of insulation disposed so as to form a planar surface over the recess that is level with or higher than the top of the device. Amended independent claim 32 requires: that the device is physically coupled to the package by a conductive bonding material; and a planarizing material filling the recess not occupied by the device and conductive bonding material to substantially create a level plane that includes the package top. Amended independent claim 40 requires: that the device is physically coupled to the package by a conductive bonding material; and a planarizing material filling the recess not occupied by the device and conductive bonding material to substantially create a level plane that includes the package top. Amended claim 45 requires: that the device is physically coupled to the package by a conductive bonding material; and a dielectric material disposed so as to form a planar surface over the recess that is level with or higher than the top of the device. Therefore, amended independent claims 14, 16, 21, 32, 40, and 45 are allowable for reasons similar to those discussed above with regard to amended claim 1. Claims 2, 4, 7-13, 15, 17, 18, 20, 22, 35, 36, 41-44, 47 and 48 each depend from an allowable independent claim and each claim adds at least one additional limitation and therefore these claims are allowable for at least the same reasons as provided above.

For the reasons set forth above, it is submitted that all pending claims are now in condition for allowance. Reconsideration of the amended claims and a notice of allowance are therefore requested. It is believed that a two month extension of time is required for this matter which is enclosed herewith. If any additional fees are required for the timely consideration of this application, please charge deposit account number 19-4972. The Examiner is requested to telephone the undersigned if any matters remain outstanding so that they may be resolved expeditiously.

Respectfully submitted,



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